Claims

1. A temperature compensated current sensor for a circuit protection apparatus comprising:

a circuit protection device for coupling to a powered circuit having current flowing therein;

a bus for carrying the power therethrough;

a sensing resistor electrically coupled to the bus for sensing current flow through the bus;

temperature sensitive compensation circuit coupled to the sense resistor for compensating ambient temperature; and

an output for reading the current.

2. The apparatus of claim 1, wherein the circuit protection device comprises an ASIC circuit.

3. The apparatus of claim 1, wherein the circuit protection device comprises an operational amplifier.

4. The apparatus of claim 1, wherein the temperature sensitive compensation circuit comprises at least one thermistor.

5. The apparatus of claim 4, wherein the at least one thermistor is positioned between the sense resistor and the ASIC circuit.

6. The apparatus of claim 4, wherein the at least one thermistor is linear.

7. The apparatus of claim 4, wherein the at least one thermistor is ceramic.

8. The apparatus of claim 4, wherein the at least one thermistor is a PTC thermistor.

9. The apparatus of claim 4, wherein the at least one thermistor is a NTC thermistor.

10. A sense resistor apparatus for providing a temperature independent current signal at varying ambient temperatures, comprising:

a sense resistor for sensing a current passed through the sense resistor and generating a voltage signal; and

at least one thermistor for thermally compensating the voltage signal generated through the sense resistor.

11. The apparatus of claim 10, wherein the at least one thermistor is positioned between the sense resistor and an ASIC circuit.

12. The apparatus of claim 10, wherein the at least one thermistor is linear.

13. The apparatus of claim 10, wherein the at least one thermistor is ceramic.

14. The apparatus of claim 10, wherein the at least one thermistor is a PTC thermistor.

15. The apparatus of claim 10, wherein the at least one thermistor is a NTC thermistor.

16. An apparatus for thermally compensating a voltage signal for an AFCI circuit, comprising:

a sense resistor for sensing a current passed through the sense resistor and generating the voltage signal;

at least one thermistor for thermally compensating the voltage signal generated through the sense resistor; and

an operational amplifier for conditioning a thermally compensated voltage signal before the thermally compensated voltage signal enters a detection circuit of an arc fault circuit interrupter device.

17. The apparatus of claim 16, wherein the detection circuit comprises an ASIC circuit.

18. The apparatus of claim 16, wherein the at least one thermistor is positioned between a sense resistor and the ASIC circuit.

19. The apparatus of claim 16, wherein the at least one thermistor is ceramic.

20. The apparatus of claim 16, wherein the at least one thermistor is linear.

21. The apparatus of claim 16, wherein the at least one thermistor is a PTC thermistor.

22 . The apparatus of claim 16, wherein the at least one thermistor is a NTC thermistor.

23. A method for translating a current signal into a temperature compensated voltage signal for an AFCI circuit, comprising:

generating a voltage signal by passing the current signal through a sense resistor;

applying the voltage signal through at least one thermistor to generate a thermally proportional voltage signal;

amplifying the thermally proportional voltage signal by energizing an operational amplification circuit; and

determining whether a detection circuit of an arc fault circuit interruptor device detects the thermally proportional voltage signal.

24. The method of claim 23, wherein the detection circuit is an ASIC circuit.

25. The method of claim 23, wherein the at least one thermistor is positioned between the sense resistor and the ASIC circuit.

26. The method of claim 23, wherein the at least one thermistor is linear.

27. The method of claim 23, wherein the at least one thermistor is ceramic.

28. The method of claim 23, wherein the at least one thermistor is a PTC thermistor.

29. The method of claim 23, wherein the at least one thermistor is a NTC thermistor.

30. A method for thermally compensating a voltage signal, comprising:

generating the voltage signal by passing a current signal through a sense resistor; and

applying the voltage signal through at least one thermistor to generate a thermally proportional voltage signal.

31. The method of claim 30, wherein the at least one thermistor is linear.

The method of claim 30wherein the at least one thermistor is ceramic.

32. The method of claim 30, wherein the at least one thermistor is a PTC thermistor.

33. The method of claim 30 wherein the at least one thermistor is a NTC thermistor.

34. A method for thermally compensating a current sensor for a circuit protection apparatus comprising:

coupling a circuit protection device to a powered circuit having current flowing therein;

coupling a bus for carrying the power therethrough;

electrically coupling a sensing resistor to the bus for sensing current flow through the bus;

coupling a temperature sensitive compensation circuit to the sense resistor for compensating ambient temperature; and

reading an output of the current.

35. The method of claim 34, wherein the circuit protection device comprises an ASIC circuit.

36. The method of claim 34, wherein the circuit protection device comprises an operational amplifier.

37. The method of claim 34, wherein the temperature sensitive compensation circuit comprises at least one thermistor.

38. The method of claim 37, wherein the at least one thermistor is positioned between the sense resistor and the ASIC circuit.

39 . The method of claim 37, wherein the at least one thermistor is linear.

40. The method of claim 37, wherein the at least one thermistor is ceramic.

41. The method of claim 37, wherein the at least one thermistor is a PTC thermistor.

42. The method of claim 37, wherein the at least one thermistor is a NTC thermistor.